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10/791,101	03/02/2004	Shimshon Gottesfeld	107044-0043	2480
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CESARI AND MCKENNA, LLP 88 BLACK FALCON AVENUE BOSTON, MA 02210			EXAMINER CANTELMO, GREGG	
			ART UNIT	PAPER NUMBER
			1795	
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			09/22/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/791,101	Applicant(s) GOTTESFELD ET AL.	
	Examiner Gregg Cantelmo	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 12-14 and 26-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 12-14 and 27-30 is/are rejected.
- 7) ☒ Claim(s) 6 and 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. In response to the amendment received June 23, 2008:
 - a. Claims 1-6, 12-14 and 26-30 are pending;
 - b. The 112 first and second paragraph rejections have been withdrawn in light of the amendment;
 - c. The prior art rejections have been withdrawn in light of the amendment and in light of the showing of common ownership to the Fannon reference.However Pratt is still held to be applicable to the claims as amended and is still applied herein, necessitated by the amendment to the claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 4, 5 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,127,058 (Pratt).

Pratt discloses a conformable fuel cell in Fig. 4, comprising: (A) a membrane electrolyte intimately interfacing with a catalyst layer along each of the membrane's major surfaces being a catalyzed membrane electrolyte, having an anode aspect and a cathode aspect, and which catalyzed membrane electrolyte is flexible (e.g., conformable to a plurality of desired shapes); (B) diffusion layers sandwiching said catalyzed

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membrane electrolyte, said diffusion layers being comprised of materials that are conformable; (C) flexible current collectors coupled with each of said anode aspect and said cathode aspect of said membrane electrolyte; (D) fuel delivery means coupled with said anode aspect of said membrane electrolyte that delivers fuel substantially uniformly to said anode aspect while said fuel cell maintains said desired shape (Figs. 2-5); (E) a fuel cell housing including a plastic frame 24 which corresponds to the desired shape of the fuel cell array and maintains compression along the fuel cell array (Figs. (E) electrical coupling 45 disposed across said anode aspect and said cathode aspect and having means for connection to an application device being powered by said fuel cell (as applied to claim 1).

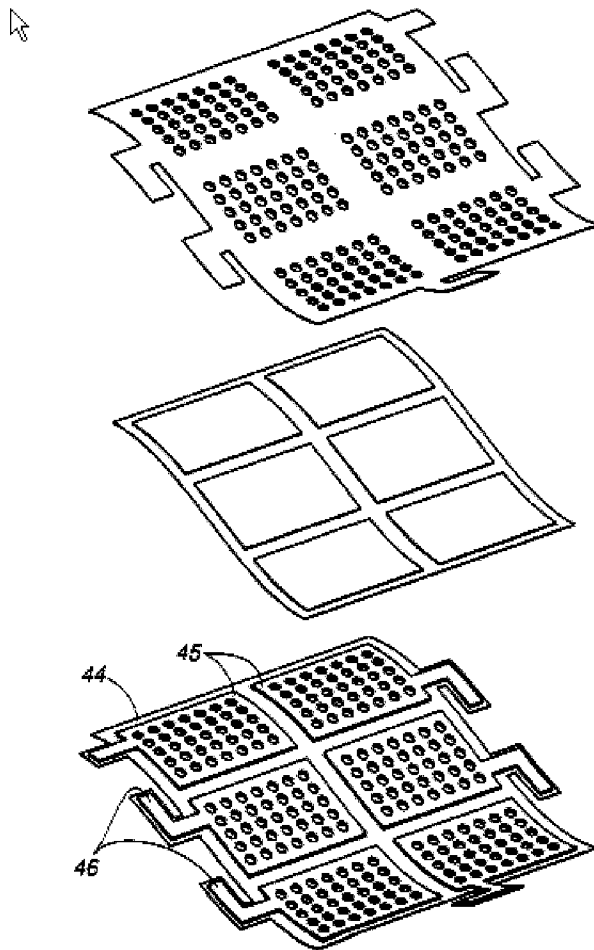


FIG. 4

The current collectors 45 at each of said anode aspect and said cathode aspect apply “adequate compression” effectively over the active area of the membrane electrolyte of each cell (Fig. 4 as applied to claim 2)

The conformable fuel cell includes a degree of water management therein and absent any definition of the term “effective water management” is broadly held to be

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exemplary of the claimed "effective water management" (see col. 3, ll. 25-30 as applied to claim 4).

The fuel is at least one of a vapor, gel, liquid or combination thereof and by example is hydrogen gas (sentence bridging columns 4 and 5 as applied to claim 5).

The fuel cell in Fig. 4 is shaped to form a curvilinear shape (col. 5, ll. 25-28 as applied to claim 12).

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pratt in view of U.S. Patent No. 6,045,575 (Rosen).

The teachings of claim 1 have been discussed above and are incorporated herein.

The difference between claim 13 and Pratt is that Pratt does not teach of mechanically attaching the fuel cell to an article of clothing.

Rosen discloses an article of clothing wherein a fuel cell is mechanically attached to the article to power the electronic light array disposed on the article (Figs. 1a-1c; col. 3, ll. 1-5; col. 6, ll. 1-10).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Pratt by mechanically fastening the fuel cell to an article of clothing which requires a power source as taught by Rosen since the combination reasonably would lead one of ordinary skill in the art to

arrive at this combination and since the selection of the fuel cell system of Pratt to a particular load is relative to the intended use of the fuel cell.

4. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rosen in view of Pratt.

Rosen discloses an article of clothing wherein a fuel cell is mechanically attached to the article to power the electronic light array disposed on the article (Figs. 1a-1c; col. 3, ll. 1-5; col. 6, ll. 1-10).

Rosen does not teach of the particulars of the fuel cell.

Pratt teaches of a conformable fuel cell system as discussed above, incorporated herein.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Rosen by using the flexible fuel cell configurations of either Pratt or Pan since it would have provided a suitable conformable fuel cell power source for use in the article of clothing of Rosen thereby providing a flexible power source to the flexible article of clothing of Rosen.

5. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pratt in view of either JP 02-234358 (JP '358) or U.S. Patent No. 6,268,077 (Kelley).

The teachings of claim 1 have been discussed above and are incorporated herein.

The difference between claim 14 and Pratt is that Pratt does not teach of providing fuel to the fuel cell from a detachable conduit that connects to the anode side of the fuel cell.

JP '358 discloses providing a detachable conduit that connects to the anode side of the fuel cell (abstract and Figs. 1, 6 and 7). Kelley discloses a similar configuration wherein fuel is provided to the anode via a fuel cartridge (Figs. 1 and 3)

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Pratt by providing a detachable conduit that connects to the anode side of the fuel cell as taught by either JP '358 is that it would have provided a way to provide fuel to the fuel cell and to permit replacing the fuel or introducing additional fuel to the fuel cell system as needed. In addition has become well known in the art to employ fuel cartridges or cassettes to a fuel cell having a receiving conduit therein in portable electronic devices so as to provide a superior power source to the portable electronic devices while providing a way to re-fuel these power sources when needed.

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pratt in view of U.S. Patent Application Publication No. 2001/0041281 (Wilkinson).

The teachings of claim 1 have been discussed above and are incorporated herein.

While not expressly recited, the fuel cell system of Pratt requires an inherent degree of compressive force therein in order to impart the requisite physical contact between the various layers in the fuel cell so as to provide for the conductive properties of the fuel cell itself.

The difference between claim 3 and Pratt is that Pratt does not teach of compressing the active area at a pressure which is equal to or greater than about 100 psi.

Wilkinson teaches that a fuel cell assembly is typically compressed (for example, at about 70 psi overall) to ensure good electrical contact between the plates and the electrodes, in addition to good sealing between fuel cell components.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Pratt by selecting the pressure of compression to be equal to or greater than about 100 psi since it would have imparted sufficient compression to the layers in the fuel cell and ensured good electrical contact between the plates and the electrodes, in addition to good sealing between fuel cell components. Generally, differences in ranges will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such ranges is critical. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969).

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pratt in view of U.S. Patent No. 4,973,531 (Zaima).

The teachings of claim 1 have been discussed above and are incorporated herein.

The difference between claim 6 and Pratt is that Pratt does not teach of providing a material which expands to impart compression to the fuel cell as recited in claim 6.

Zaima teaches that it is known to incorporate additional dedicated fuel cell compression layers which, in impart compression in response to temperature elevation in the fuel cell (see prior art claim 1).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Pratt by using the compression element such as that taught/suggested by Zaima since it would have improved the compression of the stack during operation and maintained a high degree of electrical conductivity between adjacent layers in the fuel cell.

8. Claims 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pratt in view of U.U.S. Patent Application Publication No. 2002/0071984 (Dristy).

The teachings of claim 1 have been discussed above and are incorporated herein.

The difference between claim 3 and 6 and Pratt are that Pratt does not teach compressing the active area at a pressure which is equal to or greater than about 100 psi (claim 3) or of providing a material which expands to impart compression to the fuel cell as recited in claim 6.

Dristy discloses providing a porous compressive element 64 which withstands and imparts a minimum compressive force of 100 psi to a polymer electrolyte fuel cell (paragraphs 43-46 as applied to both claims 3 and 6).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Pratt by selecting the pressure of compression to be equal to or greater than about 100 psi since it would

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have imparted sufficient compression to the layers in the fuel cell and ensured good electrical contact between the plates and the electrodes, in addition to good sealing between fuel cell components. Generally, differences in ranges will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such ranges is critical. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969). Applied to claim 3.

Furthermore, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Pratt by using the compression element such as that taught/suggested by Dristy since it would have improved the compression of the stack during operation and maintained a high degree of electrical conductivity between adjacent layers in the fuel cell. Applied to claim 6.

9. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pratt as applied to claim 1 above and further in view of U.S. Patent No. 4,973,531 (Zaima).

The teachings of claim 1 have been discussed above and are incorporated herein.

The difference between claim 27 and Pratt is that Pratt does not teach of providing a material which expands to impart compression to the fuel cell as recited in claim 6.

Zaima teaches that it is known to incorporate additional dedicated fuel cell compression layers which, in impart compression in response to temperature elevation in the fuel cell (see prior art claim 1).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Pratt by using the compression element such as that taught/suggested by Zaima since it would have improved the compression of the stack during operation and maintained a high degree of electrical conductivity between adjacent layers in the fuel cell.

10. Claims 3 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pratt as applied to claims 1 and 2 above and further in view of U.S. Patent Application Publication No. 2002/0071984 (Dristy).

The teachings of claim 1 have been discussed above and are incorporated herein.

The difference between claim 3 and 27 and Pratt are that Pratt does not teach of compressing the active area at a pressure which is equal to or greater than about 100 psi (claim 3) or of providing a material which expands to impart compression to the fuel cell as recited in claim 27.

Dristy discloses providing a porous compressive element 64 which withstands and imparts a minimum compressive force of 100 psi to a polymer electrolyte fuel cell (paragraphs 43-46 as applied to both claims 3 and 27).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Pratt by selecting the pressure of compression to be equal to or greater than about 100 psi since it would have imparted sufficient compression to the layers in the fuel cell and ensured good electrical contact between the plates and the electrodes, in addition to good sealing

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between fuel cell components. Generally, differences in ranges will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such ranges is critical. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969). Applied to claim 3.

Furthermore, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Pratt by using the compression element such as that taught/suggested by Dristy since it would have improved the compression of the stack during operation and maintained a high degree of electrical conductivity between adjacent layers in the fuel cell. Applied to claim 27.

11. Claims 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pratt as applied to claim 1 above and further in view of U.S. Patent No. 7,255,947 (Beccerra).

The teachings of claim 1 have been discussed above and are incorporated herein.

The difference between claims 28 and 29 and Pratt are that Pratt does not teach of the fuel delivery means comprising a layer of gelled fuel (claim 28) or of the fuel delivery means being affixed to the anode aspect of the fuel cell (claim 29).

Beccerra teaches of providing a layer of gelled fuel to the anode side of the fuel cell (Fig. 3 and col. 11, ll. 25-50 as applied to claim 28) and further teaches of disposing the fuel delivery means onto the frame housing of the fuel cell (as applied to claim 29).

This arrangement provides improved flow of methanol from the fuel source to the fuel cell and prevents water from migrating into the fuel cartridge (col. 11, ll. 25-50).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Pratt by using the gelled fuel delivery system of Beccerra since it would have improved flow of methanol from the fuel source to the fuel cell and prevents water from migrating into the fuel cartridge.

12. Claims 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pratt in view of U.S. Patent No. 7,255,947 (Beccerra).

Pratt discloses a conformable fuel cell in Fig. 4, comprising: (A) a membrane electrolyte intimately interfacing with a catalyst layer along each of the membrane's major surfaces being a catalyzed membrane electrolyte, having an anode aspect and a cathode aspect, and which catalyzed membrane electrolyte is flexible (e.g., conformable to a plurality of desired shapes); (B) diffusion layers sandwiching said catalyzed membrane electrolyte, said diffusion layers being comprised of materials that are conformable; (C) flexible current collectors coupled with each of said anode aspect and said cathode aspect of said membrane electrolyte; (D) fuel delivery means coupled with said anode aspect of said membrane electrolyte that delivers fuel substantially uniformly to said anode aspect while said fuel cell maintains said desired shape (Figs. 2-5); (E) a fuel cell housing including a plastic frame 24 which corresponds to the desired shape of the fuel cell array and maintains compression along the fuel cell array (Figs. (E) electrical coupling 45 disposed across said anode aspect and said cathode aspect and

having means for connection to an application device being powered by said fuel cell (as applied to claim 30).

The difference between claim 30 and Pratt is that Pratt does not teach a gel compartment containing a gelled fuel wherein the compartment follows the shape of the housing.

Beccerra teaches of providing a layer of gelled fuel to the anode side of the fuel cell (Fig. 3 and col. 11, ll. 25-50 as applied to claim 28) and further teaches of disposing the fuel delivery means onto the frame housing of the fuel cell (as applied to claim 29).

This arrangement provides improved flow of methanol from the fuel source to the fuel cell and prevents water from migrating into the fuel cartridge (col. 11, ll. 25-50).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Pratt by using the gelled fuel delivery system of Beccerra since it would have improved flow of methanol from the fuel source to the fuel cell and prevents water from migrating into the fuel cartridge.

Response to Arguments

13. Applicant's arguments, see remarks filed June 23, 2008, with respect to the rejection(s) employing Fannon have been fully considered and are persuasive.

Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Pratt alone.

The claims have been amended whereby the changes to element D of claim 1 and the introduction of additional element E now claim a structure which is held to be taught by Pratt alone. Notably, Pratt discloses a fuel delivery element for delivering fuel

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to the anode and also employs a fuel cell housing including a plastic frame 24 wherein the housing, which corresponds to the planar shape of the fuel cell array aids in compression of the fuel cell elements to maintain the requisite physical contact between the electrodes and electrolyte of the fuel cell array.

Allowable Subject Matter

14. Claims 6 and 26 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. Reasons for allowable subject matter can be found in the previous office action, incorporated herein.

Conclusion

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is 571-272-1283. The examiner can normally be reached on Monday to Thursday, 8:30-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Gregg Cantelmo/
Primary Examiner, Art Unit 1795